

REMARKS

The Official Action of 7 December 2006 has been carefully considered and reconsideration of the application as amended is respectfully requested.

The specification has been amended to correct an inadvertent clerical error. In particular, the solid content of the “pH-adjusted resin emulsion A” is in fact 15%, not 33%, as clearly described in the specification as filed at page 73, lines 3-4. The Table on page 25 has been corrected based on the description at page 73, lines 3-4 to correct this error. As discussed below, the error led to the Examiner’s calculation that Comparative Example 1 falls with the scope of the claims and to her request for clarification (see Official Action at page 9). Applicants sincerely regret the confusion engendered by this error, and respectfully point out that, with a calculation based upon the correct values $((0.15*6.7 + 0.3*6.7)/0.2)$, it is clear that Comparative Example 1 does **not** fall with the scope of the claims.

The claims stand rejected under 35 USC 103(a) as allegedly being unpatentable over Nakamura et al either alone or in combination with EP 1219689, or as allegedly being unpatentable over Yatake either alone or in combination with EP 1219689 or GB 2370580. Applicants respectfully traverse these rejections.

The claimed invention has been developed to solve the problem presented by “golden gloss”, namely: when a printed image obtained by recording with a black ink composition having a low carbon black concentration reflects the light of a fluorescent lamp or the outside light, the reflected light glistens in gold (see specification at, e.g., page 6, first paragraph). The inventors surprisingly found that, with ink compositions having such low

carbon black concentrations (less than 0.4 wt%), the problem could be solved by including in the ink compositions a fine particle emulsion so long as the solid content of the fine particle emulsion is 20 times or more the content of the carbon black.

In their Amendment filed 26 September 2006, Applicants discussed the Examples and Comparative Examples in their specification and explained how they show that **the ratio** of the solid content of the fine particle emulsion to the content of the carbon black is a **result effective variable** (see Amendment filed 26 September at paragraph bridging pages 8-9). Applicants now submit herewith the Declaration under 37 CFR 1.132 of one of the co-inventors, Tsuyoshi Sano, which provides further evidence in this regard (see discussion below). As discussed below, the examples and comparative examples of record in this application provide a comparison of the claimed subject matter with art that is more closely related to the invention than the closest prior art cited by the Examiner as represented by the cited primary references, Nakamura et al and Yatake.

Nakamura et al

Nakamura is directed to an ink comprising (i) a pigment, (ii) a resin dispersant, and (iii) a thermoplastic resin emulsion, wherein only the weight ratio of (i) to (ii) is described. There is nothing in the text of Nakamura that shows or suggests **any** weight ratio of (i) to (iii), i.e. a ratio of the solid content of the fine particles relative to the content of the carbon black. However, so long as the ratio defined in Nakamura is the former one (only), Nakamura cannot be considered to show or suggest the recited weight ratio and, *a fortiori*, cannot show or suggest the advantageous effects that can be achieved by maintaining such weight ratio within the claimed limit. Indeed, Nakamura addresses the problems of storage

stability, print quality (bleeding) and jetting stability, and does not even recognize the variables that are pertinent for solving the problem of preventing golden gloss, namely maintaining the solid content of the fine particle emulsion at 20 or more time the content of carbon black (with the content of carbon black being less than 0.4 wt%).

The Examiner acknowledges that Nakamura et al do not “explicitly” disclose a ratio of solid content of fine particle emulsion to content of carbon black, but apparently considers that Nakamura “implicitly” discloses a solid content of fine particle emulsion that is 0.02-200 times or more the content of the carbon black. With this, the Examiner is respectfully reading into the reference a range of ratios that is not there. The Examiner is speculating what the **outer limits** of a range could be based upon the described ranges of the individual components, but there is nothing in the text of the reference that describes any actual range of ratios within such possible outer limits. Thus, Nakamura discloses the content of the pigment as being “preferably from 0.1 to 10% by weight, more preferably from 0.5 to 5% by weight” (at the bottom in col. 3) and the content of the thermoplastic resin component as being “preferably from 0.2 to 20% by weight, more preferably from 7 to 20% by weight” (col. 7, lines 7-8). Nakamura is silent about the solid content in connection with the content of the thermoplastic resin component, and is silent about any ratio of resin to carbon black.

In the absence of any disclosure in the text of Nakamura to show the claimed ratio, the Examiner respectfully must rely, if at all, on the reference examples. Reviewing Examples 1 to 32 shown in Tables 1 to 5, inks containing carbon black and a thermoplastic resin emulsion among these are the inks of Examples 1, 6, 9, 13, 17 and 21-28. Looking into the details thereof, it should be firstly noted that the carbon black contents in these examples

are 1.5% or 2%, failing to satisfy the presently claimed requirement (i.e., less than 0.4 wt%).

Secondly, excepting Examples 21 and 22 which are left out of the consideration because their carbon black contents **exceed** the respective resin emulsion contents, the remaining examples include Example 24, which gives an amount ratio of “carbon black: resin emulsion” of 2:28 (14 times), and four variations of an amount ratio of “carbon black: resin emulsion” of 2:10 (5 times), 1.5:10 (6.7 times), 1.5:15 (10 times) and 2:15 (7.5 times). However, these examples merely mention the amount (wt%) of the resin emulsion without mention of its solid content. In this connection, it is disclosed that the resin emulsion used in Example 1 had a solid content of 50% (col. 18, lines 12-13). Thus, the solid content is half of the total amount in terms of % by weight. If this solid content were hypothetically applied to the other examples, the ratio of Example 24 would be 7 times and the maximum ratio among the above-noted four variations would be 5 times at the most. Accordingly, the presently claimed content ratio requirement of 20 times or more is not satisfied by the Nakamura examples. Moreover, as discussed below, the evidence of record provided by the Applicant compares the claimed invention with art that is **closer** than that disclosed by Nakamura.

YATAKE

Yatake is directed to an ink set comprising light color inks of a plurality of colors and dark color inks of a plurality of colors, wherein the light color inks contain a fine polymer particle (see, for example, Claim 1). Yatake generally discloses the pigment content in the light inks as being “from 0.01 to 10 wt%, preferably from 0.1 to 5 wt%” (col. 7, lines 53-55) and the content of the fine polymer particles as being “0.5 to 10 wt%, preferably 2.5 to 8 wt% (col. 4, lines 18-19). As with Nakamura, Yatake is also silent about the solid content in connection with the content of the fine polymer particles.

Reviewing the light black inks among the inks constituting the ink sets of the examples (i.e., dark black inks, dark color inks and dark light inks are left out of consideration), it should be firstly noted that the light black inks of Examples 1 and 2 each has a carbon black content of 1.5%, failing to satisfy the presently claimed requirement of "less than 0.4". Secondly, these light black inks have ratios of "carbon black: emulsion" of 1.5:5 (3.3 times) and 1.5:7 (4.7 times), respectively. There are mere mentions of the amount (wt%) of the emulsion without mention of its solid content. Taking this into account, the presently claimed ratio requirement of "20 times or more" is not satisfied, as with the case of Nakamura. Moreover, as with the case of Nakamura, the evidence of record provided by the Applicant compares the claimed invention with art that is **closer** than that disclosed by Yatake

As discussed in their Amendment filed 26 September 2006, the cited references do not show that the recited ratio of the solid content of the fine particle emulsion to the content of the carbon black is a **result effective variable** such that the references cannot set forth even a *prima facie* case of obviousness for the invention as claimed. See Amendment filed 26 September at pages 10-12, and MPEP 2144.05(II)(B) ("A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation."). Unless and until the PTO sets forth a *prima facie* case of obviousness, the Applicants are under no obligation to submit rebuttal evidence of non-obviousness, either in the way of evidence of critical or unexpected results or otherwise. See MPEP 2142.

In the present case, the Examiner has acknowledged that neither of the primary references, Nakamura et al., or Yatake, explicitly discloses the ratio of solid content of fine particle emulsion to content of carbon black as presently claimed. The Examiner nevertheless maintains that both references allegedly recognize that each of the pigment and resin is a result effective variable and, based upon this, asserts that **the ratio** of solid content of fine particle emulsion to content of carbon black is thus also recognized as a result effective variable.

Applicants respectfully submit that this is a *non sequitur*. Assuming that each of the references teaches the result effective nature of each of the variables individually, it does **not** follow that **the ratio** of the variables is result effective. Accordingly, and since the Examiner is taking official notice of an alleged fact without documentary evidence or a technical line of reasoning that is clear and unmistakable, Applicants respectfully call upon the Examiner to support her assertion with adequate evidence or to withdraw the assertion upon which the *prima facie* case of obviousness is based. See MPEP 2144.03.

Even assuming for the sake of argument that the cited references were sufficient to set forth a *prima facie* case of obviousness for the invention as claimed, Applicants respectfully submit that the evidence of record would be sufficient to rebut such *prima facie* case. In this connection, in addition to the evidence in the specification, Applicants now submit herewith the Declaration under 37 CFR 1.132 by one of the co-inventors of the application, Tsuyoshi Sano.

Applicants can rebut a *prima facie* case of obviousness based on overlapping

ranges by showing the criticality of the claimed range (see MPEP 2144.05(III)) or where, as here, the cited art does not show an overlapping range (or any range, see above), Applicants can compare the claimed subject matter with the closest prior art or with prior art that is more closely related to the invention than the closest prior art (see MPEP 716.02(e)). In the present case, the comparison provided by the Applicants is closer than the closest prior art cited by the Examiner. Thus, the ratio of the solid content of a fine particle emulsion to the content of the carbon black is about 15 times in each of Comparative Examples 1 and 2, which is below the claimed ratio of at least 20 times. As discussed above, this is closer than the closest ratio of solid content of fine particle emulsion to content of carbon black shown in the cited primary references. As described in Table 3 on page 79 of the specification, the results of the evaluation for golden gloss described on pages 77-78 show, unexpectedly, that golden gloss was observed in the recorded images of the Comparative Examples but not in the recorded images of the Examples.

The Examiner has dismissed the evidence in Comparative Example 2 because this was not a side-by-side comparison between the claimed inks of Examples 1-4 and the ink of Comparative Example 2, which does not comprise pH adjusted emulsion A as do the inks of Examples 1-4. However, as discussed above, to be probative of non-obviousness there is no requirement for a side-by-side comparison; only that the claimed ink be compared with the closest prior art ink or closer. In any event, the comparative examples are intended to show the importance of the total **amount** of the solid content of fine particle emulsion relative to the content of carbon black, irrespective of the kind of fine particle emulsion. Applicants have now included in the Declaration submitted herewith additional evidence in this respect, including additional evidence to show that the amount is critical also when considering the

pH adjusted resin emulsion of Examples 1-4 (see, also, Comparative Example 1).

In this connection, Comparative Example 3 uses one kind of fine particle emulsion (the content thereof in terms of its solid content: $0.33*10=3.3(\%)$), Comparative Example 4 uses three kinds of fine particle emulsions, including pH-adjusted resin emulsion, (the total content thereof in term of their solid contents: $0.15*3.3+0.30*3.3.+0.33*3.0=$ about 2.5 (%)), and Comparative Example 5 uses one kind of fine particle emulsion (the content thereof in terms of its solid content: $0.50*4.0=2.0(\%)$) not falling within the scope of Claim 3.

The results in the Declaration show that golden gloss was observed in the recorded images of each of the Comparative Examples, but not in the recorded images of the Examples. These results could not have been expected by the cited references and are probative of non-obviousness.

In view of the above, Applicants respectfully submit that (a) the cited references are incompetent to set forth even a *prima facie* case of obviousness for the invention as claimed, and (b) even assuming for the sake of argument that the references were sufficient to set forth a *prima facie* case, the evidence of record would be sufficient to rebut the same. Accordingly, Applicants respectfully submit that the prior art rejections of record should be withdrawn.

Accordingly, the application is respectfully now believed to be in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully

warranted.

Respectfully submitted,

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